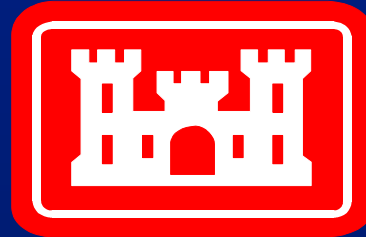
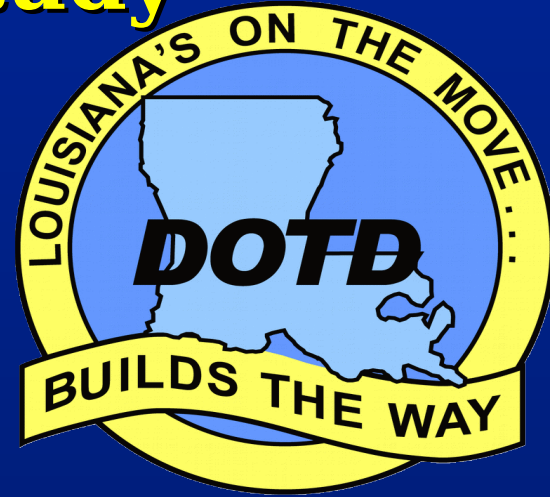
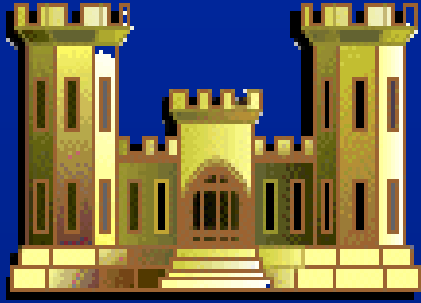


Donaldsonville, LA to the Gulf of Mexico

Feasibility Study



**US Army Corps
of Engineers®**
New Orleans District



***U.S. Army Corps of
Engineers
New Orleans District***

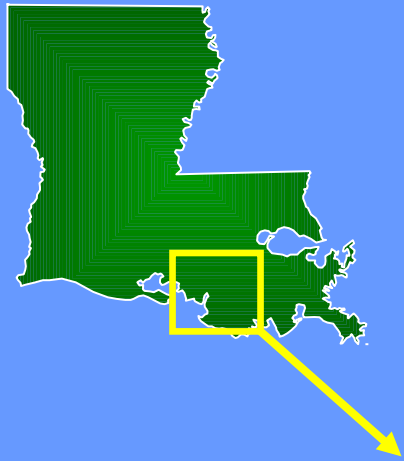
**Existing Conditions
Interior Drainage and Hurricane
Surge**

by

Reynold Broussard

06/07/07

Donaldsonville, Louisiana to the Gulf of Mexico





Donaldsonville, LA to the Gulf of Mexico

Topics

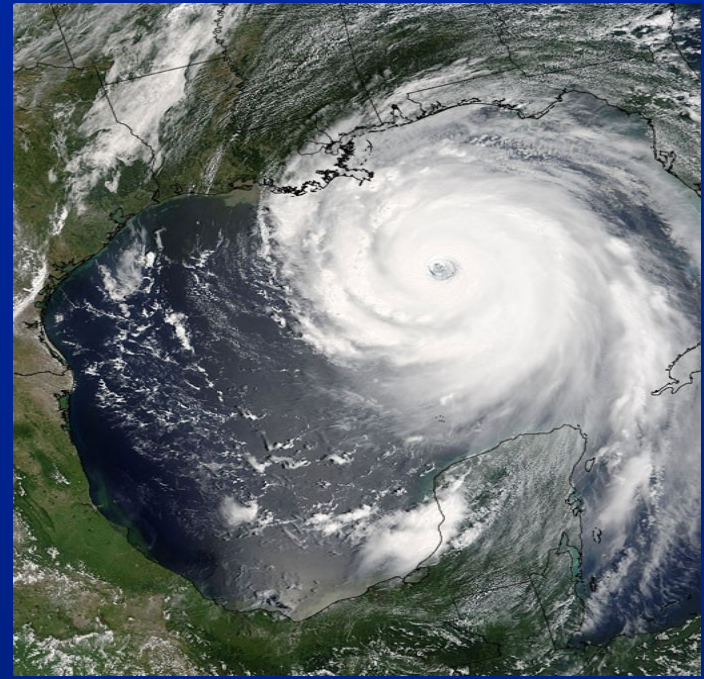
- **Typical Existing Conditions**
 - Reach and Stage Data for Economic Analysis
- **Hurricane Surge**
 - ADCIRC Modeling
- **Future Activities**
 - Levee Alternatives
 - Water and Sediment Diversion Structures



**Corps of Engineers
New Orleans District**

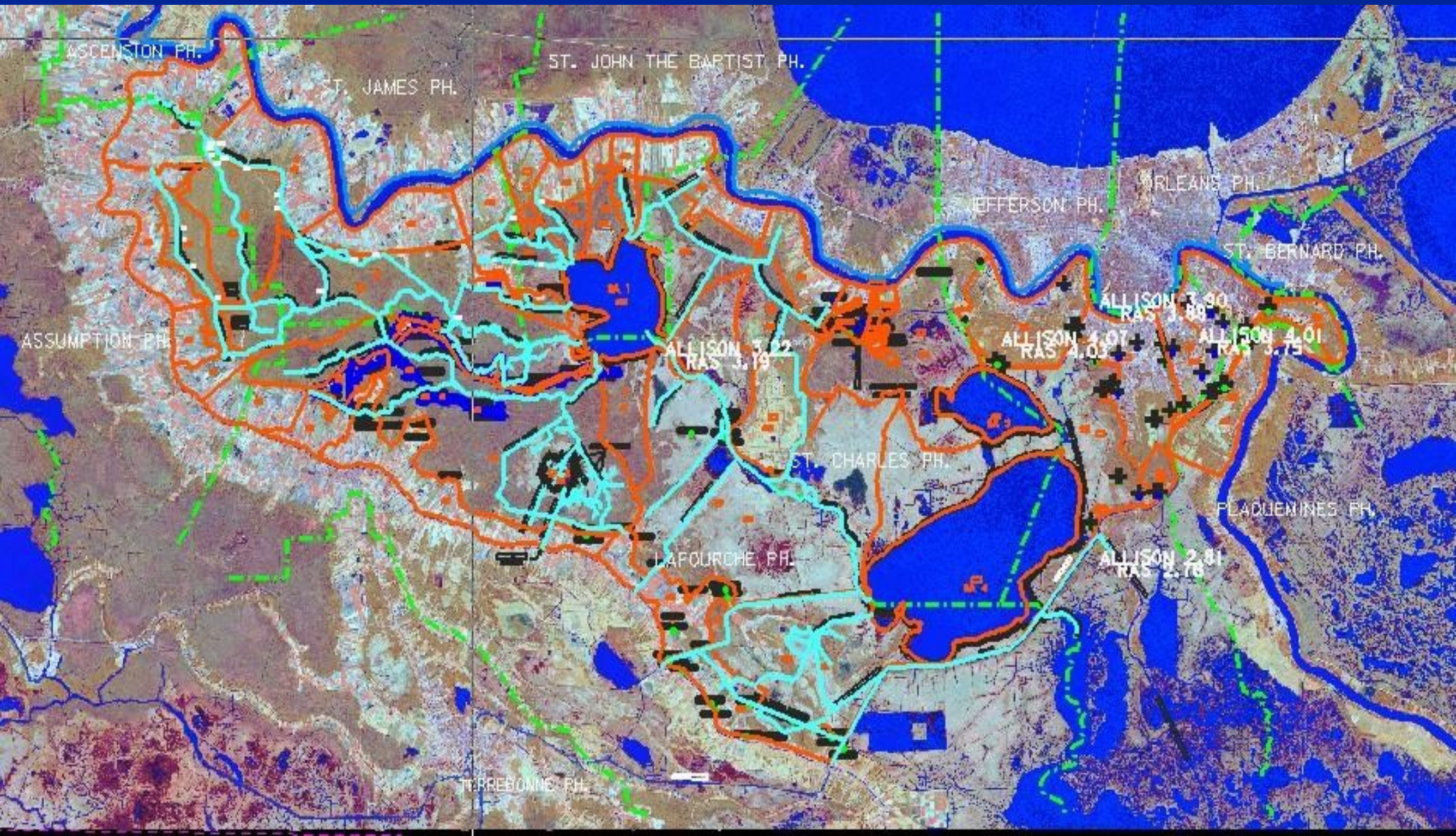
Study Objectives

- **Hurricane Protection**
- **Interior Drainage**
- **Eco-system Restoration**





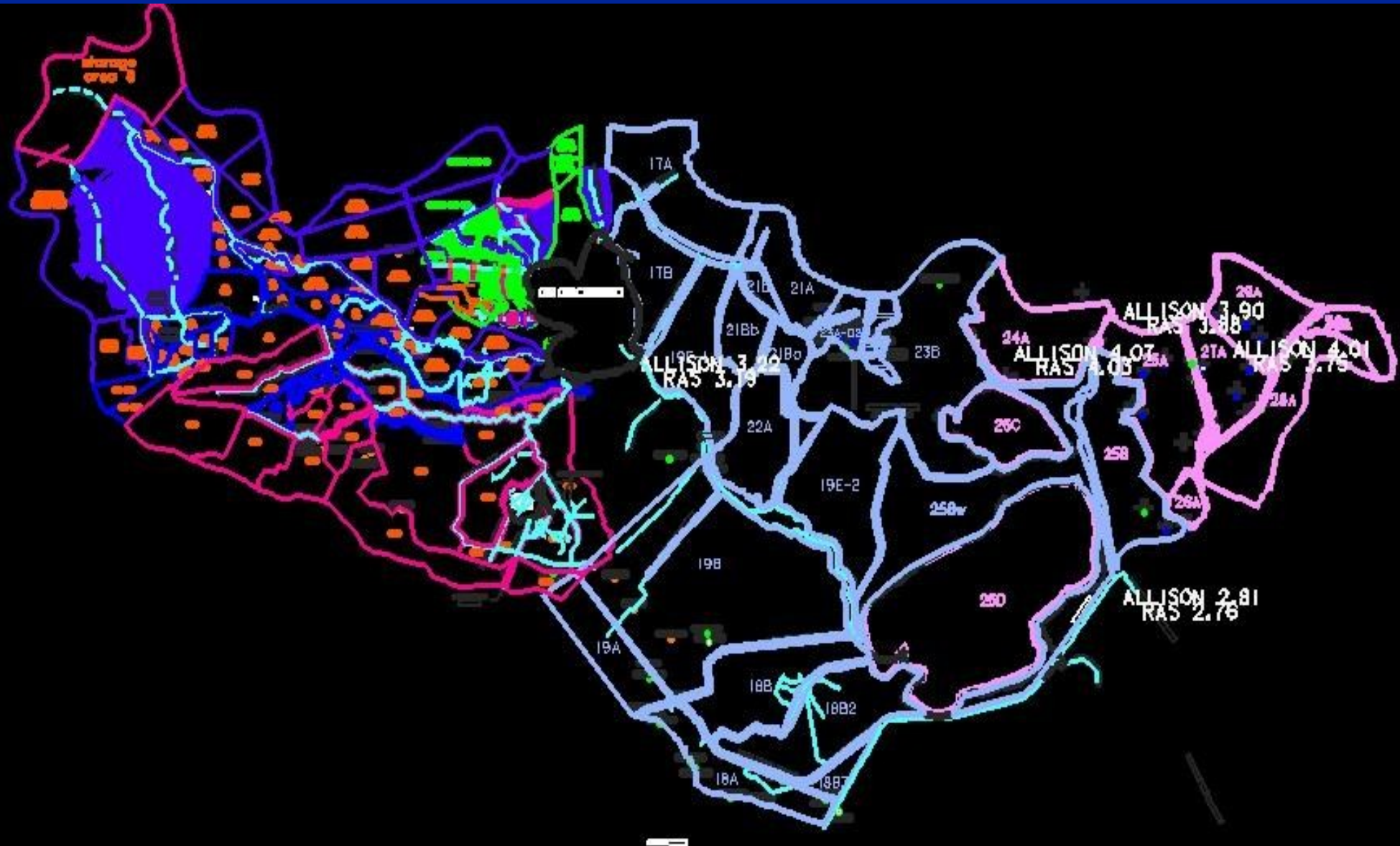
Mexico





Donaldsonville, LA to the Gulf of Mexico

HEC - RAS Drainage Areas





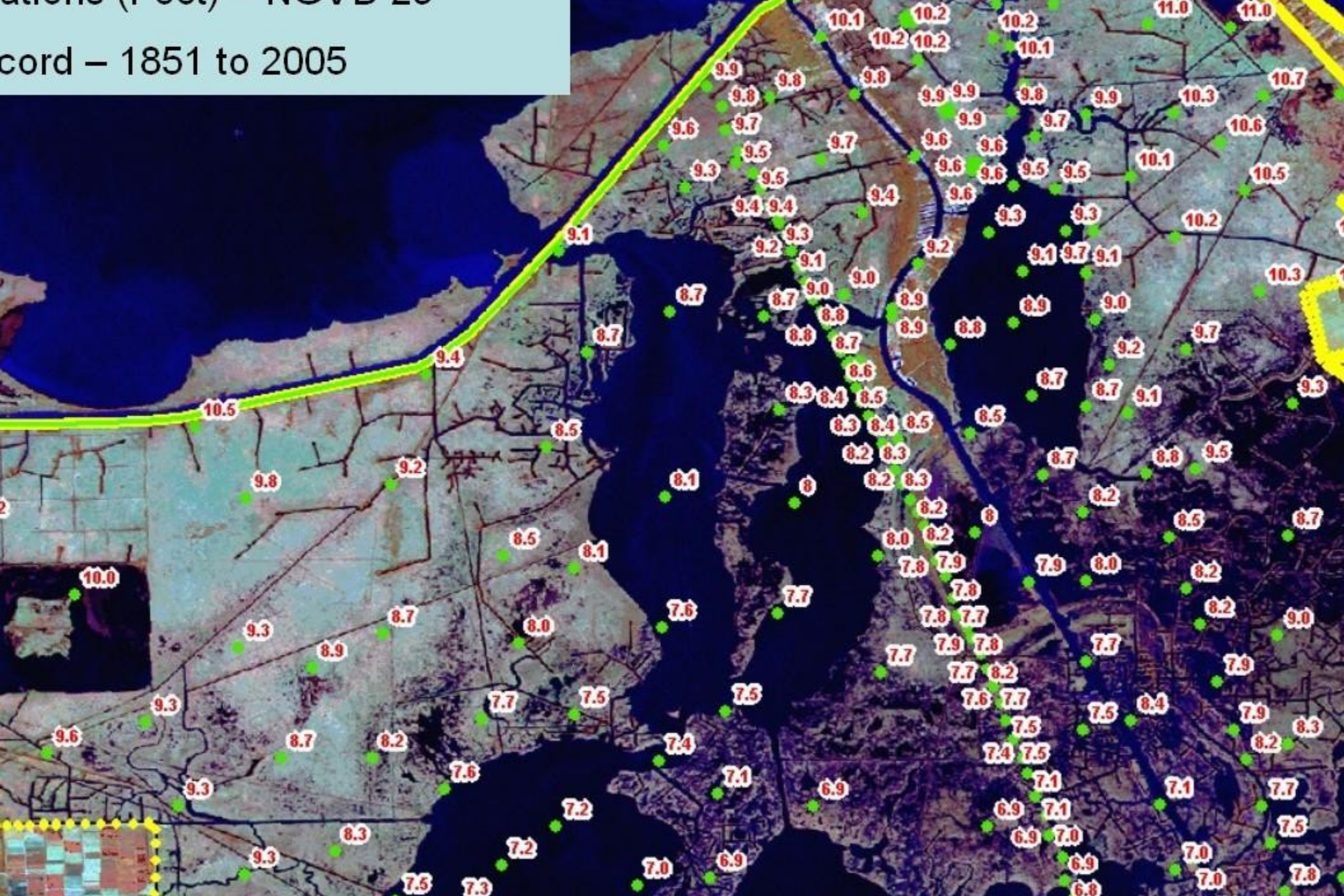
Donaldsonville, LA to the Gulf of Mexico

ADCIRC Modeling





Record – 1851 to 2005

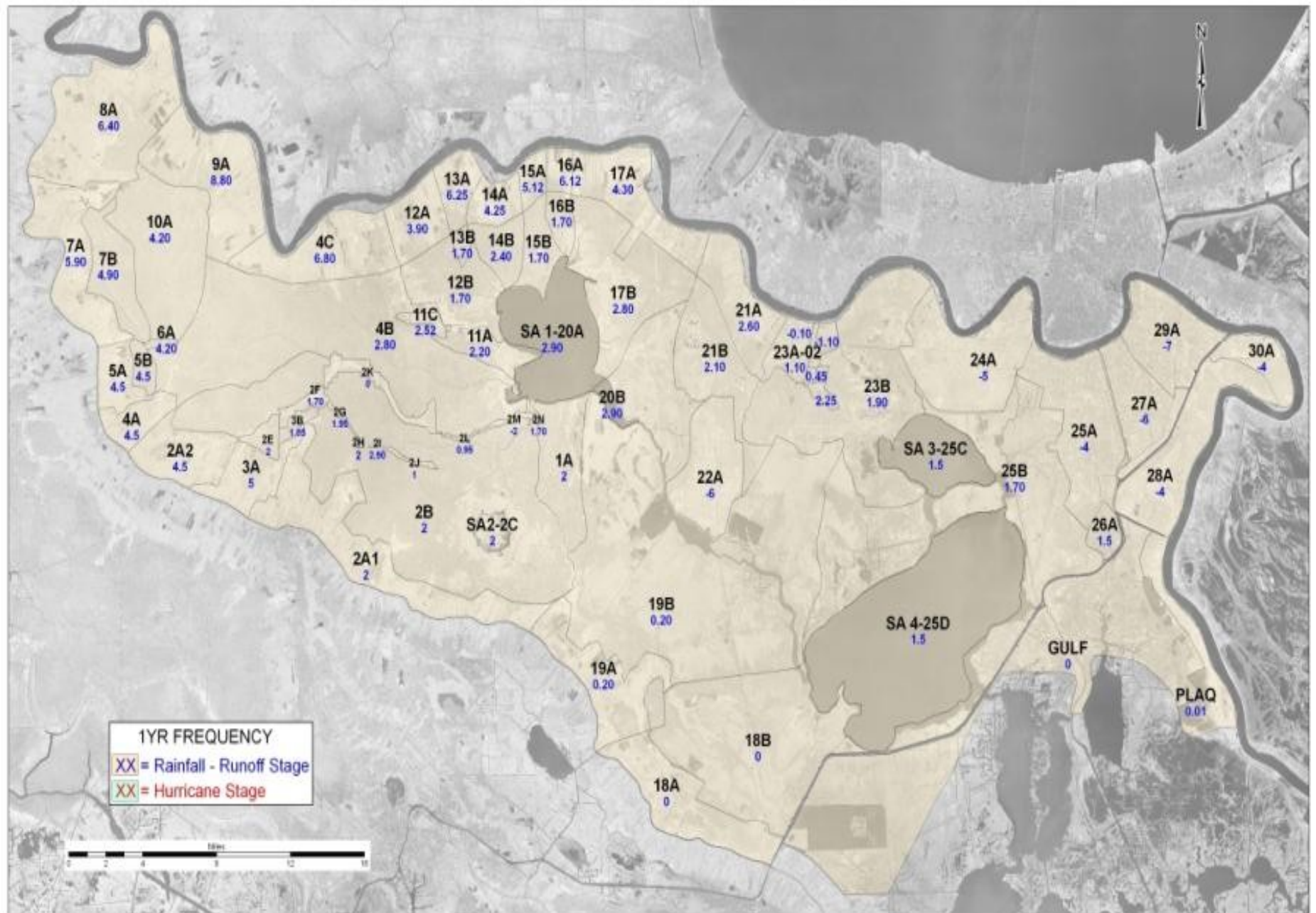




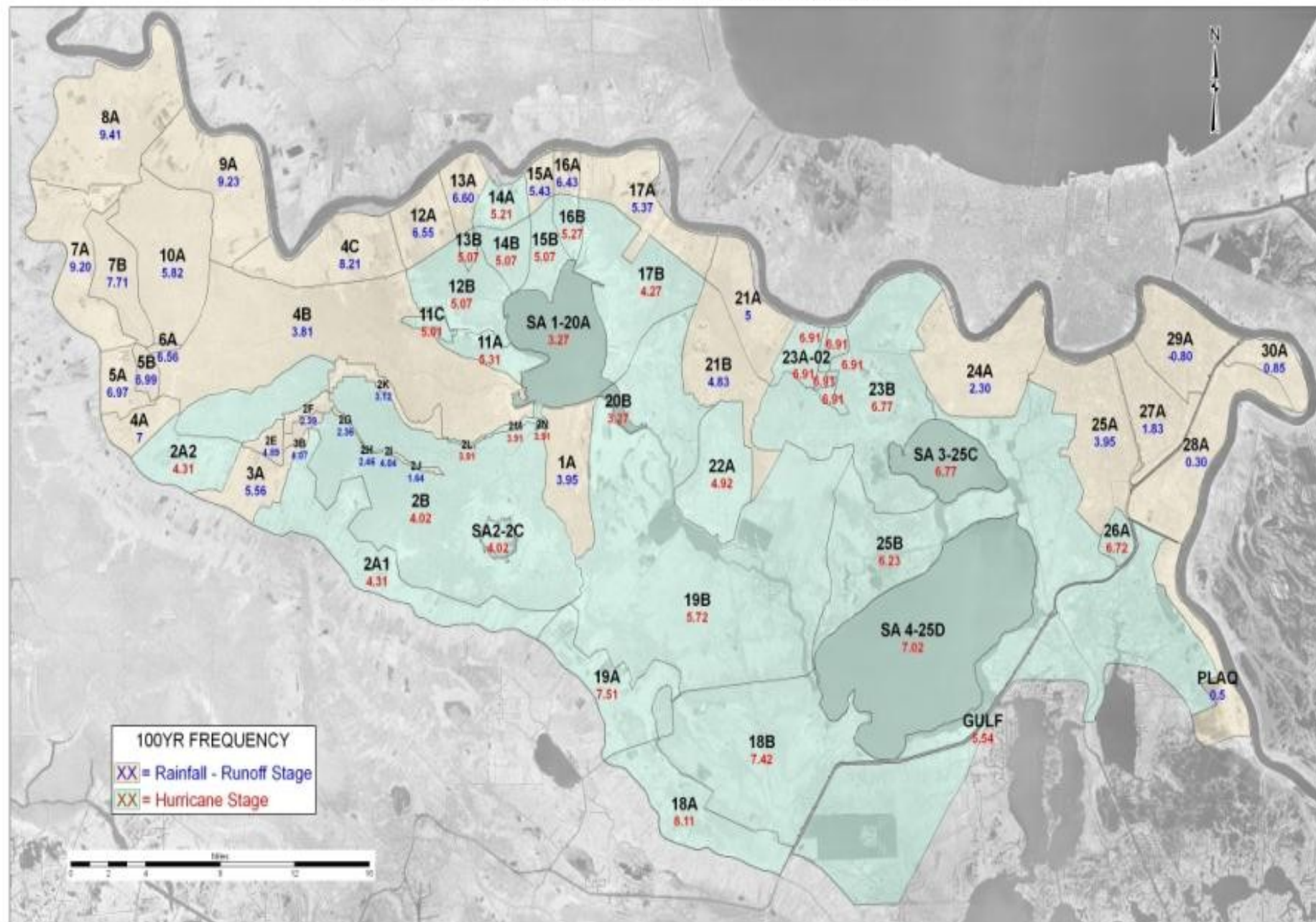
Donaldsonville, LA to the Gulf of Mexico

Existing Conditions Stages
(ft., NAVD88 2004.65)

EXISTING CONDITIONS STAGE (FT. NAVD88 2004.65)



EXISTING CONDITIONS STAGE (FT. NAVD88 2004.65)





Donaldsonville, LA to the Gulf of Mexico

Current Levee Alignments Being Studied

Donaldsonville, LA to the Gulf of Mexico

Possible Hurricane Levee Alignments



Donaldsonville, LA to the Gulf of Mexico

Possible GIWW Levee Alignments



West Bank & Vicinity, New Orleans, LA, Hurricane Protection Project



Donaldsonville, LA to the Gulf of Mexico

Option 1

- 110 ft. wide floodgate/navigation structures

Head loss at structure and max. head for alignment

Velocity

Option 2

- Structures from Option 1 plus tidal exchange (TEX) structures

Velocity ~ 2.6 fps

Option 3

- Structures from Options 1 and 2 plus additional TEX structures

Head loss ~ 0.5 ft

DONALDSONVILLE, LA TO THE GULF OF MEXICO

HWY 90 ALIGNMENT

OPTION I

**MAXIMUM WATER SURFACE ELEVATION
INCREASE: 1.60 FT.**

DES ALLEMANDS

1-110 ft wide navigational
gate

Maximum head loss: 0.01 ft.

Maximum velocity: 0.73
ft./s

 Hwy 90 Alignment

 Existing Hurricane
Protection Levee

West Bank & Vicinity
Hurricane Protection

Plaquemines Parish
Non-Fed Levees

Larose to
Golden Meadow
Hurricane Protection

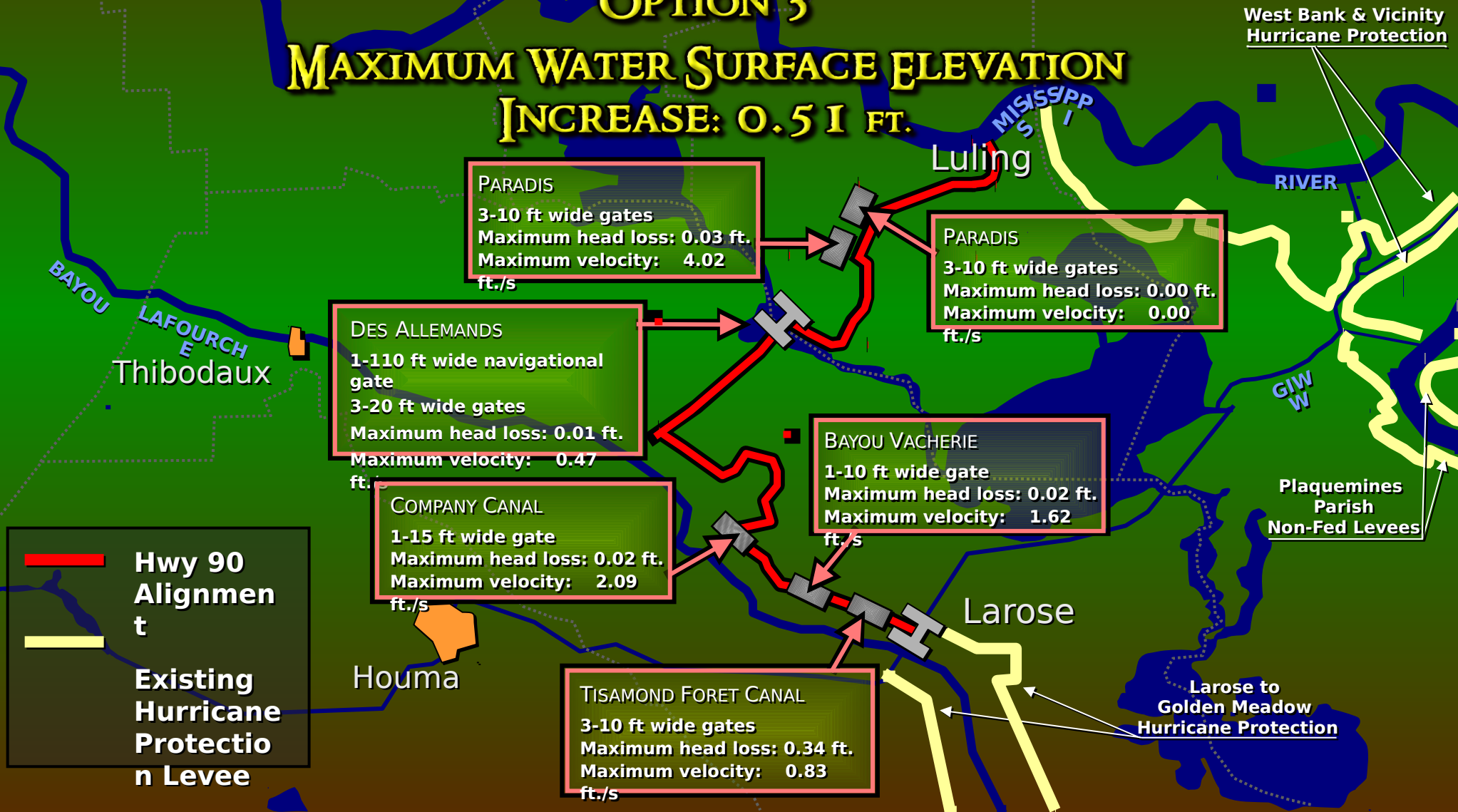


DONALDSONVILLE, LA TO THE GULF OF MEXICO

HWY 90 ALIGNMENT

OPTION 3

**MAXIMUM WATER SURFACE ELEVATION
INCREASE: 0.51 ft.**



DONALDSONVILLE, LA TO THE GULF OF MEXICO

PIPELINE LEVEE ALIGNMENT

OPTION I

**MAXIMUM WATER SURFACE ELEVATION
INCREASE: 0.69 ft.**



DONALDSONVILLE, LA TO THE GULF OF MEXICO

PIPELINE LEVEE ALIGNMENT

OPTION 3

**MAXIMUM WATER SURFACE ELEVATION
INCREASE: 0.41 ft.**

West Bank & Vicinity
Hurricane Protection

RIVER

Luling

Lac
Des
Allemands

BAYOU GAUCHE

1-110 ft wide navigational
gate
Maximum head loss: 0.01 ft.
Maximum velocity: 1.38
ft./s

Lake
Salvador

GIW
W

DES ALLEMANDS

1-110 ft wide navigational
gate
Maximum head loss: 0.02 ft.
Maximum velocity: 2.07
ft./s

COMPANY CANAL

1-15 ft wide gate
Maximum head loss: 0.02 ft.
Maximum velocity: 2.09
ft./s

TISAMOND FORET CANAL

3-10 ft wide navigational
gate
Maximum head loss: 0.34 ft.
Maximum velocity: 0.83
ft./s

Larose

Plaquemines
Parish
Non-Fed Levees

Larose to
Golden Meadow
Hurricane Protection

BAYOU VACHERIE

1-10 ft wide gate
Maximum head loss: 0.02 ft.
Maximum velocity: 1.62
ft./s

Houma

Thibodaux

LAFOURCH
E

BAYOU
U

Donaldsonville

 Pipeline Alignment

 Existing Hurricane
Protection Levee

DONALDSONVILLE, LA TO THE GULF OF MEXICO

GIWW ALIGNMENT

OPTION I

MAXIMUM WATER SURFACE ELEVATION

INCREASE: 0.34 FT.

West Bank & Vicinity
Hurricane Protection

Luling

RIVER

Lac Des
Allemands

Lafourche
Parish

Thibodaux

BAYOU

BAYOU PEROT

1-110 ft wide navigational
gate

Maximum head loss: 0.02 ft.

Maximum velocity: 7.98
ft./s

Lake
Cataouatche

Plaquemines
Parish

Non-Fed Levees

Lake
Salvador

Larose to
Golden Meadow
Hurricane Protection

Houma

Larose

GIWW

Terrebonne
Parish

BARTARIA BAY
WATERWAY

1-110 ft wide
navigational gate

Maximum head
loss: 0.01 ft.

Maximum velocity:
4.39 ft./s



GIWW Alignment



**Existing Hurricane
Protection Levee**

DONALDSONVILLE, LA TO THE GULF OF MEXICO

GIWW ALIGNMENT

OPTION 2

MAXIMUM WATER SURFACE ELEVATION

INCREASE: 0.27 FT.

West Bank & Vicinity
Hurricane Protection

Lac
Des
Allemands

Luling

RIVER

Lake
Cataouatche

Lafourche
Parish

Plaquemines
Parish
Non-Fed Levees

Lake
Salvador

BAYOU PEROT

**1-110 ft wide structure
AND**

**22-20 ft wide tidal
interchange structures**

**Maximum head loss:
0.01 ft.**

**Maximum velocity:
2.63 ft/s**

Hurricane Protection

Larose to
Gulf Meadow

Larose

BARTARIA BAY
WATERWAY

**1-110 ft wide structure
AND**

**6-20 ft wide tidal
interchange structures**

Maximum head loss:

Donaldsonville

Thibodaux

BAYOU

LAFOURCHE

Houma

Terrebonne
Parish

GIWW

 **GIWW Alignment**

 **Existing Hurricane
Protection Levee**



Donaldsonville, LA to the Gulf of Mexico

Water and Sediment Diversion Structures

Donaldsonville, LA to the Gulf of Mexico

Water & Sediment Diversion Structures



This map illustrates the Lake St. Charles watershed, divided into five influence areas (L1 to L5) and several catchment areas (C1, C2). The areas are color-coded and outlined with dashed lines: L1 (yellow), L2 (blue), L3 (red), L4 (green), and L5 (orange). The map shows the extensive Lake St. Charles system, including Lake Des Allemands, Lake Salvador, and Lake Cade. Major roads and highways are marked with red and blue lines. Place names such as St. John the Baptist, St. James, St. Charles, St. Bernard, and Terrebonne are labeled. A scale bar at the bottom right indicates distances in miles (0 to 24), and a north arrow is located in the top right corner.



Legend

 Bayou Lafourche
 Davis Pond
 Myrtle Grove
 Marsh Creation via Dedicated Dredging
 Proposed Freshwater and/or Sediment Diversion

 Proposed Freshwater and/or Sediment Diversion

— < 1000 cfs
 - - - C1 Influence Area
 - - - L1, L2, L3, L4 Influence Area
 — 1000 cfs
 — 5000 cfs
 - - - L5 Influence Area

TYPE

- * Lock
- Pump Station
- Federal Water Control Structure
- Channel Floodgate
- ▲ Weir
- Control Structure
- Diversion Structure
- Drainage Structure
- Levees and Floodwalls selection
- Barrier Islands
- CWPRA-Region 2



IMAGERY
Projected coordinate system name: NAD 1983 UTM Zone 15N
Geographic coordinate system name: GCS North American 1983
Resolution: 1.000000

SHEET ID NO. 1 of 25
INDEX MAP
DONALDSONVILLE TO LAKE CHARLES
FEASIBILITY STUDY



Donaldsonville, LA to the Gulf of Mexico

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Study Website:

<http://www.mvn.usace.army.mil/pd/projectsList/>

Below the List of Projects

click on "Mississippi River & Tributaries (MRT)"

click on "Donaldsonville to the Gulf of Mexico"